

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS**

1. A method of manufacturing a continuous sucker rod coil comprising the steps of:
 - 5 (a) selecting a plurality of input coils, each input coil having the same uniform hardness, and each input coil having two free ends;
 - (b) fusing adjacent free ends of adjacent input coils together to form one continuous length of rod, said fusing creating fused areas and a heat-affected zone at each fused area;
 - 10 (c) treating each of said heat-affected zones to alleviate irregularities induced during fusing;
 - (d) winding said output coils into a finished coil.
2. The method described in claim 1 further comprising the step of removing mill scale
15 from the surface of the rod.
3. The method described in claim 1 further comprising the step of placing the surface of the rod into compression.
- 20 4. The method described in claim 2 further comprising the step of placing the surface of the rod into compression.
5. The method described in claim 4 wherein the step of removing mill scale from the surface of the rod and the step of placing the surface of the rod into compression are
25 accomplished by shot-peening.
6. The method of claim 1 further comprising the step of shot-peening the surface of the continuous rod.
- 30 7. The method described in claim 6 where said shot-peening occurs after said fusing step.
8. The method described in claim 6 where said shot-peening occurs before said fusing step.

9. The method described in claim 1 further comprising the steps of inspecting for flaws and marking flaws for removal.
- 5 10. The method described in claim 9 where said inspecting and marking steps occur after said fusing step.
11. The method described in claim 9 where said inspecting and marking steps occur before said fusing step.
- 10 12. The method of claim 10 further comprising the steps of: reversing said rod to place flaws marked for removal to the beginning of said fusing step; cutting out flaws creating further adjacent free ends; fusing said further adjacent free ends to create fused areas; and, inspecting said fused areas and marking said fused areas for flaws.
- 15 13. The method of claim 6 further comprising the steps of: inspecting for flaws and marking said flaws for removal, said inspecting and marking steps occurring after said fusing step; reversing said rod to place flaws marked for removal to the beginning of said fusing step; removing said flaws creating further adjacent free ends; fusing said further adjacent free ends to create fused areas; and then shot-peening and flaw inspecting said fused areas.
- 20 14. A method of manufacturing a continuous sucker rod coil comprising the steps of:
- 25 (a) selecting one or more input coils each with the same consistent hardness, each input coil having two free ends;
- (b) inspecting said input coil for flaws;
- (c) marking said flaws;
- (d) removing said flaws creating further free ends in said input coil;
- 30 (e) fusing adjacent free ends together to form one continuous length of rod, each of said fusing creating a fused area and a heat-affected zone at each fused area;
- (f) treating each of said heat-affected zones to alleviate irregularities induced during fusing;
- (g) winding said output coils into a finished coil.

15. The method as described in claim 14 wherein the step of inspecting the rod for flaws is a visual inspection of said input coil and includes marking of said flaws.
- 5 16. The method as described in claim 14 wherein the step of inspecting the rod for flaws is by eddy-current flaw detection along the length of the rod and includes marking of said flaws.
- 10 17. The method as described in claim 14 wherein the step of inspecting the rod for flaws is a visual inspection of said input coil and by eddy-current flaw detection along the length of the rod and includes marking of said flaws.
- 15 18. The method as described in claim 14 further comprising the step of shot-peening the surface of the rod.
19. The method described in claim 1 or 14 further comprising the step of coating the surface of said input coil with a corrosion inhibitor.
- 20 20. The method described in claim 1 further comprising the step of straightening said input coil.
21. The method described in claim 14 further comprising the step of straightening said input coil.